

CLAIMS

What is claimed is:

1. A method of improving mobile communication hard handoffs comprising:

5 receiving signal quality information from a coverage area for a first pilot signal of a first frequency, the first pilot signal being from a first cellular site;

receiving signal quality information from the coverage area for a second pilot signal of the first frequency, the second pilot signal being from a second cellular site;

generating an output display that includes first predicted locations for hard handoffs from

10 the first cellular site to the second cellular site, the output display being generated based on a parameter of a first value that is representative of a ratio between the strength of the second pilot signal relative to the combined strength of, at least, the second pilot signal and the first pilot signal;

modifying the parameter from the first value to a second value; and

15 regenerating the output display to include second predicted hard handoff locations based on the second value of the parameter.

2. The method of claim 1, wherein the first and second cellular sites comprise code

division multiple access based cellular sites and the parameter is a T_COMP value.

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3. The method of claim 1, wherein the output display further includes the signal quality information for the first and second pilot signals by geographic location in the coverage area.

4. The method of claim 1, further comprising:
receiving signal quality information from the coverage area for a third pilot signal of a second frequency, the third pilot signal being from the first cellular site; and
receiving signal quality information from the coverage area for a fourth pilot signal of the 5 second frequency, the fourth pilot signal being from the second cellular site,
wherein the output display further includes the signal quality information for the first, second, third and fourth pilot signals by geographic location in the coverage area.

5. The method of claim 4, wherein the signal quality information for the first, 10 second, third and fourth pilot signals is empirically collected.

6. The method of claim 5, wherein the signal quality information is collected using a code division multiple access pilot scanner during a physical drive test in the coverage area.

15 7. The method of claim 5, further comprising, prior to generating the output display, filtering signal quality information for one or more respective pilot signals associated with a third cellular site from the empirically collected pilot signal quality information from the coverage area.

20 8. The method of claim 7, wherein the filtering is done based on respective pilot number offsets of the pilot signals associated with the third cellular site.

9. The method of claim 7, wherein the filtering is done based on respective pilot number offsets of the pilot signals associated with the first and second cellular sites.

10. The method of claim 4, wherein the method is implemented as a set of machine executable instructions having programming features to toggle between a first version of the output display that includes the first and second pilot signals' strength information and at least one of the first and second predicted hard handoff locations, and a second version of the output display that includes the third and fourth pilot signals' strength information and at least one of the first and second predicted hard handoff locations.

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11. The method of claim 1, wherein the output display is a geographic map inclusive of the coverage area that includes graphical indicators, which designate the predicted hard handoff locations, and wherein the output display further includes graphical indicators of a geographic topography of the coverage area.

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12. The method of claim 11, wherein the output display further includes color-coded shading indicative of the signal quality of at least one of the first, second, third and fourth pilot signals.

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13. The method of claim 1, wherein the first frequency is implemented as an overlay carrier frequency in the first cellular site and is implemented as only a pilot signal frequency in the second cellular site.

14. The method of claim 13, further comprising modifying the signal strength of the second pilot signal to effect changing the hard handoff locations in substantial accordance with the regenerated output display.

5 15. The method of claim 1, wherein the coverage area comprises an overlap of a transmission area of the first cellular site and a transmission area of the second cellular site.

16. The method of claim 15, wherein the coverage area further comprises an overlap of a transmission area of third cellular site.

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17. In a system for analyzing and improving mobile communication hard handoff locations, wherein pilot signal quality information for a coverage area is collected empirically during a physical drive test of the coverage area using a pilot signal scanner, an article of manufacture comprising:

15 a storage medium having a plurality of machine-readable instructions stored thereon, wherein the instructions, when executed, provide for:

receiving signal quality information from the coverage area for a first pilot signal of a first frequency, the first pilot signal being from a first cellular site;

receiving signal quality information from the coverage area for a second pilot signal of the first frequency, the second pilot signal being from a second cellular site;

20 generating an output display that includes first predicted locations for hard handoffs from the first cellular site to the second cellular site, the output display being generated based on a parameter of a first value that is representative of a ratio between

the strength of the second pilot signal relative to the combined strength of, at least, the second pilot signal and the first pilot signal;

modifying the parameter from the first value to a second value; and

regenerating the output display to include second predicted hard handoff locations
5 based on the second value of the parameter.

18. The article of claim 17, wherein the output display comprises a geographic map and further includes the signal quality information for the first and second pilot signals by geographic location.

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19. The article of claim 17, wherein the instructions further provide for:

receiving signal quality information from the coverage area for a third pilot signal of a second frequency, the third pilot signal being from the first cellular site; and

receiving signal quality information from the coverage area for a fourth pilot signal of the
15 second frequency, the fourth pilot signal being from the second cellular site,

wherein the output display further includes the signal quality information for the first, second, third and fourth pilot signals by geographic location.

20. The article of claim 19, wherein the instructions further provide for, prior to

20 generating the output display, filtering signal quality information for one or more respective pilot signals associated with a third cellular sites from the empirically collected pilot signal quality information for the coverage area.

21. The article of claim 20, wherein the filtering is done based on respective pilot number offsets of the pilot signals associated with the third cellular site.

22. The article of claim 20, wherein the filtering is done based on respective pilot 5 number offsets of the pilot signals associated with the first and second cellular sites.

23. The article of claim 17, wherein a transmission power of the second pilot signal is modified in correspondence with the second value of the parameter, such that actual hard handoff locations substantially correspond with the regenerated output display.

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24. A method of improving mobile communication hard handoffs comprising:
receiving signal quality information from a coverage area for a first pilot signal of a first frequency, the first pilot signal being from a first cellular site;
receiving signal quality information from the coverage area for a second pilot signal of the first frequency, the second pilot signal being from a second cellular site;
receiving signal quality information from the coverage area for a third pilot signal of a second frequency, the third pilot signal being from the first cellular site;
receiving signal quality information from the coverage area for a fourth pilot signal of the second frequency, the fourth pilot signal being from the second cellular site,
generating an output display that includes first predicted locations for hard handoffs from the first cellular site to the second cellular site and the signal quality information for at least one of the first, second, third and fourth pilot signals by geographic location in the coverage area, the output display being generated based on a parameter of a first value that is representative of a

ratio between the strength of the second pilot signal relative to the combined strength of, at least, the second pilot signal and the first pilot signal;

modifying the parameter from the first value to a second value; and

regenerating the output display to include second predicted hard handoff locations based

5 on the second value of the parameter.

25. The method of claim 24, further comprising filtering signal quality information for one or more respective pilot signals associated with a third cellular site from the empirically collected pilot signal quality information for the coverage area prior to generating the output 10 display.

26. The method of claim 24, further comprising modifying the signal strength of the second pilot signal to effect changing actual hard handoff locations in substantial accordance with the regenerated output display.

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27. The method of claim 24, further comprising modifying the value of the parameter used by one or more mobile stations in the coverage area to the second value.

28. The method of claim 24, wherein the one or more mobile stations comprise code 20 division multiple access based mobile stations and the parameter comprises a T_COMP value.

29. In a system for analyzing and improving mobile communication hard handoff locations, wherein pilot signal quality information for a coverage area is collected empirically during a physical drive test of the coverage area using a pilot signal scanner, an article of manufacture comprising:

5 a storage medium having a plurality of machine-readable instructions stored thereon, wherein the instructions, when executed, provide for:

receiving signal quality information from the coverage area for a first pilot signal of a first frequency, the first pilot signal being from a first cellular site;

10 receiving signal quality information from the coverage area for a second pilot signal area of the first frequency, the second pilot signal being from a second cellular site;

receiving signal quality information from the coverage area for a third pilot signal of a second frequency, the third pilot signal being from the first cellular site;

receiving signal quality information from the coverage area for a fourth pilot signal of the second frequency, the fourth pilot signal being from the second cellular site,

15 generating an output display that includes first predicted locations for hard handoffs from the first cellular site to the second cellular site and the signal quality information for at least one of the first, second, third and fourth pilot signals by geographic location in the coverage area, the output display being generated based on a parameter of a first value that is representative of a ratio between the strength of the second pilot signal relative to the combined strength of, at least, the second pilot signal and the first pilot signal;

20 modifying the parameter from the first value to a second value; and

regenerating the output display to include second predicted hard handoff locations based on the second value of the parameter.